

GEBIKA, Lyubov' Vasil'yevna, kand. veter. nauk; Tbilisi, U.S.S.R.,
~~1963~~

[Trichostrongylus in cattle] Trikhomonoz krupnogo rogatogo
skota. Rostov-na-Donu, Rostovskoe knizhnoe izd-vo, 1963.
(MIRA 17:6)
26 p.

K. A. A.

HAZAROV, V.M., kandidat tekhnicheskikh nauk; GENIKE, A.A.; PRILUPIN, M.T.;
LAZANOV, P.Ye.

New apparatus for measuring distances in geodesy. Good, i kart.
no.7:42-43 J1 '57. (MIRA 10:10)
(Telemeter)

3(4)

AUTHORS:

Nazarov, V. M., Candidate of Technical Sciences, SOV/6-58-11-2/15
Prilepin, M. T., Candidate of Technical Sciences,
Genike, A. A., Mikhaylov, V. S.

TITLE:

Results of Field Tests of the Test Model of the ~~Large Optical~~
Range Meter of the TsNIIGAik (Rezultaty polevykh ispytaniy
opytnogo obraztsa Bol'shogo svetodal'nomena TsNIIGAik)

PERIODICAL:

Geodeziya i kartografiya, 1958, Nr 11, pp 12-15 (USSR)

ABSTRACT:

The results of tentative tests of this range meter carried out in 1956 were published in Geodeziya i kartografiya. In 1957 the design of the range meter was somewhat modified and it was subsequently tested on the base net. The block scheme of the range meter is given here. A quartz generator produces high-frequency oscillations (10 Mcy.) which are mixed with the oscillations from the second generator. The resulting high-frequency oscillations are applied to a Kerr-cell after being multiplied and amplified. These oscillations are used as supporting oscillations for the phase-detecting. Two frequency measuring methods were tested: One according to the calibrated scale of the generator (using calibration points), the other with a conversion device. The second

Card 1/2

Results of Field Tests of the Test Model of the Large Optical Range Meter of the TsNIIGAIK SOV/6-58-11-2/15

method was preferred, as it proved to be more simple, convenient, exact, and faster. The test runs were carried out in the ~~Cosmos~~ ^{on the Sarata base net} from September 9 to November 1, 1957. From the results presented in this paper it is to be seen that this optical range meter of the TsNIIGAIK complies with the requirements placed upon big range meters. At present the design is somewhat altered and the principal electronic scheme is improved. It is intended to reduce the weight and the size of the device. There are 2 figures, 2 tables, and 1 Soviet reference.

Card 2/2

3(4)
AUTHORS:

Larin, B. A., Candidate of Technical Sciences, Nazarov, V. M., Candidate of Technical Sciences, ~~Genike, A. A.~~
Mikhaylov, V. S., Pel'dman, G. A. SOV/6-59-10-1/21

TITLE:

A Large Optical Range Finder of the Central Scientific Research Institute of Geodesy, Aerial Surveying, and Cartography

PERIODICAL:

Geodeziya i kartografiya, 1959, Nr 10, pp 3-11 (USSR)

ABSTRACT:

At the end of 1958, the TsNIIGAIK (Central Scientific Research Institute of Geodesy, Aerial Surveying, and Cartography) constructed a test model of a large optical range finder which is intended for the measurement of distances of up to 25 km with a relative error of 1 : 350,000. A scheme of alternating modulation frequency of light was used for the test model. Further, two narrow frequency ranges with 30 megacycles each were used, which were distant from each other by 800 megacycles approximately. This scheme permits reliable frequency measurement and precise determination of distances over 6-30 km. The block diagram of the instrument is shown in figure 1, the instrument itself in figures 2 and 3. Its mode of operation and design

Card 1/2

A 'Large Optical Range Finder of the Central Scientific Research Institute of Geodesy, Aerial Surveying, and Cartography SOV/6-59-10-1/21

are then illustrated. Preliminary work and the course of measurement on this instrument are described. The model was tested in the open air near Moscow in March 1959 and near Kirzhak town (Vladimir oblast') in May and June, 1959. The results obtained are tabulated. Herefrom it follows that the differences arising from the distances measured do not exceed the root mean square error of the sides measured by the method of triangulation. Tests have shown that the large optical range finder guarantees great accuracy in linear surveying. It is recommended to use the instrument for measuring the line of departure in triangulation and for measuring the sides of polygonal traverses that are laid instead of the triangulation of first order. There are 4 figures and 4 tables.

Card 2/2

SOV/6-60-1-3/17

3(4)

AUTHORS:

Genike, A. A., Shevelev, A. P.

TITLE:

The Tellurometer^{1st} and the Results of Its Examination by the
TsNIIGAIK (Central Scientific Research Institute of Geodesy,
Aerial Surveying and Cartography)

PERIODICAL:

Geodeziya i kartografiya, 1960, Nr 1, pp 17-28 (USSR)

ABSTRACT:

The present paper first describes the mode of operation of the tellurometer developed by T. D. Uodli in the Union of South Africa in 1957. It is a phase[✓] radar distance meter measuring the phase difference at the beat frequency. It is pointed out that the principle of such a radar distance meter had already been suggested in 1930 by L. I. Mandel'shtam and N. D. Papaleksi (Ref, Footnote p 19). This radar distance meter was called incoherent phase distance meter. Its circuit diagram is shown and explained by figure 1. Then, the simplified diagram of the tellurometer is shown in figure 2, and the mode of operation, the measuring method, and the evaluation of observation results, are described. In September 1959, the TsNIIGAIK (Central Scientific Research Institute of Geodesy, Aerial Surveying and Cartography) acquired a tellurometer and

Card 1/2

SOV/6-60-1-3/17

The Tellurometer and the Results of Its Examination by the TsNIIGAIK (Central Scientific Research Institute of Geodesy, Aerial Surveying and Cartography)

examined the instrument. The examination comprised the determination of the constants of the instrument, and the measurement of triangulation sides with a length of from 10 to 30 km. Besides, the measuring method was worked through for shorter distances. The results of this examination are given. They show that the accuracy indicated by the firm is attained in surveys in inhabited areas. In such areas, the tellurometer is well suited for measuring the sides of the triangulation of 1st order. Additional examinations should be carried out to judge the applicability of the tellurometer in woodless and mountainous regions as well as in regions with large uninterrupted water surfaces. There are 3 figures, 3 tables, and 1 Soviet reference.

Card 2/2

GENIKE, A. A.

AUTHORS: Larin, B. A., Candidate of Technical Sciences, Bazarov, V. M., Candidate of Technical Sciences, Filippin, M. Y., Candidate of Technical Sciences, Entin, I. I., Candidate of Technical Sciences, Genko, A. A., Lashov, P. Ia., Mikhaylov, V. A., Sherelev, A. P. 3/06/60/500/04/610/019 3007/3005

TITLE: On the Book by A. V. Kondrashov, "Electrooptical Range Finders"

PERIODICAL: Dizains i kharakteristika, 1960, Nr 4, pp 75-76 (USSR)

TEXT: This is a review of the book by A. V. Kondrashov (Ref. Postnote on p 75) published in 1959. It is thoroughly discussed as far as it first tries to generalize and systematize the data required for optical range finders. The book consists of two parts. The first part (60% of the volume) gives data from physics, radio engineering, electrical engineering, and electronics. The second part deals with problems directly connected with optical range finders. The incoherent data of varying level on the fields mentioned in the first part are too extensive and inconvenient. The division and mode of representation of these chapters is also a failure. The theory of optical range finders is not well explained. Several concrete mistakes of the book are pointed out. The great number of such mistakes

Card 1/2

reduces the value of the book considerably. It is regretted that the editor of the book Yu. V. Puzov paid his principal attention to the title, not to the contents of the book, as can be seen from the introduction. There is 1 Soviet reference.

Card 2/2

LARIN, B.A., kand.tekhn.nauk; NAZAROV, V.M., kand.tekhn.nauk; PRILEPIN, M.T.,
kand.tekhn.nauk; ENTIN, I.I., kand.tekhn.nauk; GENEKE, A.A.;
LAZANOV, P.Ye.; MIKAYLOV, V.S.; SHEVELEV, A.P.

On A.V. Kondrashkov's book "Electrooptical range finders." Geod.
1 kart. no.4:73-76 Ap '60. (MIRA 13:8)
(Range finders) (Kondrashkov, A.V.).

GENIKE, A.A.

Improvements and investigations of the tellurometer made in
Canada. Geod. i kart. no.1:67-75 Ja '61. (MIRA 14:9)
(Tellurometer)

3"

S/270/63/000/003/004/005
A001/A101

AUTHOR: Genike, A. A.

TITLE: The geodetic radio range finder of the BPII (VRD) type

PERIODICAL: Referativnyy zhurnal, Geodeziya, no. 3, 1963, 35, abstract 3.52.220
("Sb. ref. Tsentr. n.-i. in-t geod., aeros'yemki i kartogr.", 1962,
no. 27, 12 - 13)

TEXT: In distinction from tellurometers, in the VRD radio range finder, constructed by TsNIIOAIK, the voltage converter is made with semiconductor triodes; this made it possible to reduce the weight of the energy supply unit and to place it directly in the station. Additional filters are introduced into the oscillographic unit of the key station. The cavity resonator and the system of thermal regulation have been changed. The set of the VRD radio range finder includes one key station and two drift ones. The range finder is energy supplied from 12-v accumulator batteries of the 6CT-42 (6ST-42) type. The power consumed by one station is 50 - 60 w. Five lines of 5 - 22.5 km long were measured by an experimental VRD device on the TsNIIOAIK polygon; the same lines had been meas-

Card 1/2

S/270/63/000/003/004/005
A001/A101

The geodetic radio range finder of...

ured earlier with a geodimeter. The maximum discrepancy between the results of measuring a 22.5-km line with a geodimeter and a VRD instrument amounted to 15 cm. In 1961 were manufactured five sets of VRD.

V. Sinyagina

[Abstracter's note: Complete translation]

Card 2/2

AM4008930

BOOK EXPLOITATION

S/

Geniko, A. A.

Geodetic phase tellurometers (Geodezicheskiye fazovy*ye radiodal'-nomery*) Moscow, Gosgeoltekhizdat, 63. 0112 p. illus., biblio. Errata slip inserted. 1,600 copies printed. (At head of title: Glavnoye upravleniye geodezii i kartografii gosudarstvennogo geologicheskogo komiteta SSSR)

Series note: Moscow. Tsentral'ny*y nauchno-issledovatel'skiy institut geodezii, aeros'yemki i kartografii. Trudy*, vy*p. 164

TOPIC TAGS: surveying, radio surveying, radio range finding, geodesy, tellurometer, radio range finder

PURPOSE AND COVERAGE: The book, claimed to be the first on the subject, treats the theory of geodetic UHF phase-sensitive radio range finders, the requirements imposed on the main units of the instrument, problems and calculation procedure involved in range measurement, and possible further development of radio range finding techniques. The book is intended for radio specialists engaged in the design and development of radio range finders.

Card 1/3

AM4008930

and also for a wide circle of practicing geodeticists, scientific workers, and students in geodetic higher educational institutions. The author is sincerely grateful to TsNIIGAIK staff members A. P. Shevelov, S. V. Markitesov, L. L. Bagryanskiy, N. N. Nezhdanov, and V. A. Pinayev for participating in the tests and investigations of radio range finders. He is also deeply grateful to Candidates of Technical Sciences I. I. Bntin, M. T. Prilepin, V. A. Velichko and engineer I. A. Bogdanov for many useful remarks.

TABLE OF CONTENTS [abridged]:

Introduction - - 3

Ch. I. Theory of operation of geodetic radio range finders (includes a procedure for excluding the influence of the underlying surface and eliminating ambiguities in the measured range) - - 8

Ch. II. Some problems in radio wave propagation - - 44

Ch. III. Factors governing the choice of the main elements of a radio range finder - - 55

Ch. IV. Procedure for measuring distances with radio range finders

Card 2/3

AM4008930

(includes choice of most favorable topographic and meteorological conditions) - - 67

Ch. V. Methods for processing the measurement results - - 87

Ch. VI. Error analysis in radio range measurements - - 97

Ch. VII. Some further improvement in geodetic radio range

finders - - 102

Conclusion - - 109

Literature - - 110

SUB CODE: SP, 02

SUBMITTED: 07May63

NO REF SOV: 018

OTHER: 033

DATE ACQ: 28Oct63

Card 3/3

L 58494-65 EWA(k)/FED/EWG(r)/EWT(1)/EEC(k)-2/EEC(t)/T/EEC(b)-2/EMP(k)/EMA(n)-2/
EWA(h) Pm-l/Pn-l/Po-l/Pf-l/Pub/Pi-l/Pi-l LIP(c) WG/GW
ACCESSION NO: AF5010588 UR/0006/65/000/004/0007/0016
528.514+528.516
65
55
13

AUTHOR: Gopike, A. A.

TITLE: Current status of the development of electronic methods of distance
measurements *am*

SOURCE: Geodesiya i kartografiya, no. 4, 1965, 7-16

TOPIC TAGS: geodesy, geographic instrument, electronic measurement

ABSTRACT: A recent Soviet article gives a brief review and evaluation of advances in geodimeter- and tellurometer-type instruments made by several countries since the XIII General Assembly of the International Union of Geodesy and Geophysics, held in Berkeley, California, in 1963. The list includes eight instruments of Soviet and Soviet-bloc manufacture, which either were in the development stage or have been produced since the Assembly (tabulated below).

Card 1/5

L 58194-65

ACCESSION NO: AP5010583

Soviet and Soviet-Bloc Geodimeters and Tellurometers

Instrument designation	Use	Type of improvement
ED-1 ¹⁰ (Soviet geodimeter)	Triangulation base lines and 1st-order traverse sides	
SVY-1 ¹² (Soviet geodimeter)	Triangulation base lines and 2nd- and 3rd-order traverse sides (used in USSR, Poland, Rumania, Bulgaria, and other Soviet-bloc countries)	Uses DATA-50 silicon tubes; transmitting and receiving optical systems symmetrical; distance measuring capability increased to 20 km
VHD ⁶ (Soviet tellurometer)	Similar to the first model of the Tellurometer; used to measure triangulation traverse sides	Not being manufactured at present
RDG ⁶ (Soviet tellurometer)		Currently in production

Card 2/5

L 58494-65

ACCESSION NR: AP5010588

GET-31 (Hungarian tellurometer)	Similar to the first model of the Tellurom- eter; used in USSR and Hungary "for geodetic work"	
GO-1 (Polish tellurometer)	Measure short distances (10-12 km)	3-cm range; "no published data available" (in USSR at time of writing)*
PEM-1	Test model only	3-cm range; tested 1963-64
PEM-2 (East German tellurometers)	Replaces above model	Tests to be run in 1965

Present plans for further improvement of Soviet geodimeter- and tellurometer-type instruments are described as including: 1) design and manufacture of a lighter, more portable, and more economical geodimeter than either the EOD-1 or S¹-1, which will make possible precise meas-

Card 3/5

L 58191-65

ACCESSION N^o: AP5010588

urements of distances up to 20—25 km by the use of lasers, 2) development of small geodimeters for use in various kinds of topographic and geodetic engineering operations, which will make it possible to measure distances from 100 m to 2 km in the daytime and up to 5 km at night with an error of not more than 1—2 cm (first models to be issued in the "near future"); and 3) improvement of tellurometer-type instruments through better techniques of demounting and raising antennas (to a height of 25 m), replacement of cathode-ray tubes with more modern registration systems, conversion from the 10-cm radio wavelength to a 3-cm range or shorter, and more exhaustive investigations of the effect of external physical conditions on the accuracy of tellurometer measurements, especially in second- to fourth-order surveys in steppes, deserts, and across bodies of water.

* Complete description, with photographs and schematics, of this instrument and its technical characteristics are contained in a paper by H. Krzysztow and D. Mieczyslaw in Przegląd geodezyjny (Poland), no. 4, 1965, 131-135.

Orig. art. has: 11 formulas.

Card 4/5

L 58494-65
ACCESSION NR: AP5010588

ASSOCIATION: none

SUBMITTED: 00

ENCL: 00

SUB CODE: ES, EC

NR REF SOV: 000

OTHER: 000

FEB v. 1, no. 8

Card 211
5/5

AZAROV, A.L.; NENAROKOMOV, Yu.F.; GENIKE, O.A.

Practice of planning crushing sections of Krivoy Rog Basin
Mining and Ore Dressing Combines. Gor. zhur. no.5:58-62 My
'63. (MIRA 16:5)

1. Vsesoyuznyy nauchno-issledovatel'skiy i proyektnyy institut
mekhanicheskoy obrabotki poleznykh iskopayemykh, Leningrad.
(Krivoy Rog Basin--Crushing Machinery)

~~GENIKHOVICH, L.~~

For an increase in the production of dyes. Prom. koop. 14 no.5:12-
13 My '60. (MIRA 13:12)

1. Glavnyy inzhener arteli "Tekhnokraska," Leningrad.
(Dyes and dyeing--Apparatus)

BOLTINSKIY, V.N., akademik; GENIKHOVICH, M.I.; KOGAN, Ye.A.; NIKIFOROV, P.Ye.
PLISHKIN, A.A.; POLYAK, A.Ya.; SOLOVEYCHIK, A.G.; FILIPPOV, A.I.;
SHCHUPAK, A.D.; YAKOBI, M.A.

Performance of machine-tractor units at increased speeds. Mekh.
i elek.sots.sel'khoz. 17 no.3:1-19 '59. (MIRA 12:8)

1. Vsesoyuznaya akademiya sel'skokhozyaystvennykh nauk im.
Lenina (for Boltinskiy).
(Agricultural machinery)

PORTNOV, A.I.; ZAYTSEVA, R.M.; GERNIKHOVICH, O.M.

Developing indicators for rating the quality of dog rose extracts and improving the process of "cholosas" production. Apt.delo 6 no.1: 31-35 Ja-V '57. (MLBA 10;3)

1. Iz kafedry farmatsevticheskoy khimii (zaveduyushchiy - professor A.I.Portnov) Odesskogo farmatsevticheskogo instituta.
(DOG ROSE) (DRUGS)

L 18374-63

EWI(1)/BDS

AFFTC/ASD/ESD-3

RB

ACCESSION NR: AP3005875

S/0050/63/000/008/0003/0010

59
38

AUTHOR: Berlyand, M. Ye.; Onikul, R. I.; Genikhovich, Ye. I.; Lozhkina, V. P.

TITLE: Contamination of the atmosphere by industrial wastes under anomalous stratification conditions

SOURCE: Meteorologiya i gidrologiya, no. 8, 1963, 3-10

TOPIC TAGS: aerosol, aerosol diffusion, atmospheric inversion, atmospheric contamination, temperature exchange coefficient

ABSTRACT: The diffusion of light and heavy aerosols has been investigated for the complex case of an anomalously stratified atmosphere above the level of the source and for certain related cases. The inversion layer is characterized by weak vertical exchange; the exchange coefficient k_z decreases sharply in the intercepting layer and increases farther aloft; in normal stratification k_z increases to the top of the surface layer and remains constant above it. The dependence of the exchange coefficient on height is complex and must be determined numerically. The distribution of the aerosol concentration is essentially dependent on the k_z profile. When the inversion layer is considerably

Card 1/3

L 18374-63

ACCESSION NR: AP3005875

higher than the source, the influence of the layer at short distances is not great, even if k_2 within the inversion layer is extremely small. If the lower boundary of the inversion layer approaches the level of the source, the intercepting effect increases appreciably, but can be detected only at a considerable distance from the source. The anomalous stratification associated with an inversion layer aloft does not always lead to a significant enhancement of the surface concentration. If the source is sufficiently high above the ground and the intercepting layer is sufficiently high above the source, a relatively small intensification of the surface concentration occurs within a zone of several kilometers from the source. If the source is not high above the ground, and an inversion layer is directly above it, the intercepting effect of the inversion layer will be highly significant; at sufficiently great distances from the source the surface concentration may increase by a factor of more than 2. When the source is within or above the inversion layer, the penetration of the aerosol into the surface layer is slight, even at great distances from the source. Gravitational settling must also be considered in a study of the propagation of heavy aerosols. This problem is solved numerically. In the absence of an inversion, the surface concentration near

Card 2/3

L 18374-63

ACCESSION NR: AP3005875

the source will be greater for a heavy aerosol than for a light aerosol. The influence of an inversion above the source is less for the former. The downward propagation of a heavy aerosol is not hindered by lower-lying inversions to the same extent as is the downward propagation of a light aerosol. Orig. art. has: 12 formulas and 4 tables.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory)

SUBMITTED: 00 .

DATE ACQ: 06Sep63

ENCL: 00

SUB CODE: AS

NO REF SOV: 004

OTHER: 000

Card 3/3

BERLYAND, M.Ye.; GENIKHOVICH, Ye.L.; LOZHKINA, V.P.; ONIKUL, R.I.

Numerical solution of the turbulent diffusion equation and
calculation of atmospheric pollution near industrial
enterprises. Trudy GGO no.138:3-17 '63. (MIRA 17:2)

BERLYAND, M.Ye.; GENIKHOVICH, Ye.L.; ONIKUL, R.I.

Determining the atmospheric pollution by fumes from chimneys of
electric stations. Trudy GGO no.158:3-21 '64. (MIRA 17:9)

BERLYAND, M.Ye.; GENIKHOVICH, Ye.L.; LOZHKINA, V.P.; ONIKUL, R.I.

Numerical study of atmospheric diffusion under normal and anomalous conditions of stratification. Trudy GGO no.158:22-31 '64.

Characteristics of the diffusion of heavy pollutants in the atmosphere.
Ibid.,:32-40 (MIRA 17:9)

L 62503-65 EWT(1)/FCC GW

ACCESSION NR: AT5019732

UR/2531/65/000/172/0003/0022

25
23
B+1

AUTHOR: Berlyand, M. Ye. (Doctor of physico-mathematical sciences);
Genikhovich, Ye. L.; Dem'yanovich, V. K.

55 55

TITLE: Some timely problems in the investigation of atmospheric diffusion

SOURCE: Leningrad, Glavnaya geofizicheskaya observatoriya. Trudy, no. 172, 1965.
Voprosy atmosferynoy diffuzii i zagryazneniya vozdukha (Problems of atmospheric
diffusion and contamination), 3-22

TOPIC TAGS: atmospheric diffusion, atmospheric contamination, air pollution

12,55

ABSTRACT: This is a summary of some timely problems involved in the investigation
of industrial contamination of the atmosphere. It is a further development of the
work published by M. Ye. Berlyand and others, especially in Tr. GGU, No. 138,
1963 and No. 158, 1964. This paper presents an analysis in general form of the
equation of stationary diffusion, taking into account wind direction fluctuations
and the effect of averaging of concentrations. On the basis of the results of
numerical solution of the diffusion equation, an analysis is made of the influence
of the vertical distribution of the coefficients of the equation on its solution.
It is shown under what conditions the vertical distribution of temperature, wind

Card 1/3

L 62503-65

ACCESSION NR: AT5019732

and the exchange coefficient exert an appreciable influence on the atmospheric diffusion of impurities. When the frequency of certain conditions is relatively great they should be taken into account in the planning of installations which discharge harmful substances into the atmosphere. When such anomalous conditions occur, the installations should reduce the output of harmful substances or shut down entirely. A special part of the paper analyzes the diffusion of an impurity in an area of hilly relief and gives the results of numerical computations for sloping relief forms. As an example, the authors cite the case of a point source with $H \gg 50$ m situated at various sites relative to a hill 50 m high. It is shown, for example, that the maximum surface concentration when the source is on the top of the hill is not less than the maximum surface concentration in the case of diffusion over a flat surface. The article concludes with calculations of the initial rise and heating of the impurity and a numerical solution of this problem is given. This paper and earlier studies served as the basis for drawing up the "Interim Method for Computations of Atmospheric Scattering of Wastes (Sols and Sulfur Compounds) from the Stacks of Electric Power Stations". Details concerning this technical document are given in the same collection of articles. Orig. art. has: 54 formulas and 3 figures.

Card 2/3

L 62503-65

ACCESSION NR: AT5019732

2

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad
(Main Geophysical Observatory)

SUBMITTED: 00

ENCL: 00

SUB CODE: ES

NO REF SOV: 019

OTHER: 002

Card 3/3

L 01452-66 ENT(1)/FCC ON

ACCESSION NR: AT5019734

UR/2531/65/000/172/0042/0047/19

AUTHOR: Genikhovich, Ye. L.; Gracheva, V. P.
44,55 44,55

TITLE: Analysis of the dispersion of horizontal fluctuations in wind direction

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 172, 1965, Voprosy atmosferynoy diffuzii i zagryazneniya vozdukha (Problems of atmospheric diffusion and contamination), 42-47

TOPIC TAGS: wind, wind direction, wind fluctuation
12,44,55

ABSTRACT: In an analysis of continuous records of meteorological elements (such as wind direction or wind velocity), it is necessary to consider the mean values of these elements for short intervals and later analyze these values for some quite long period. In such a process, both the very small and very large frequencies are cut off from the frequency spectrum. This paper is an analysis of the dependence of the dispersion of meteorological values on the internal and external averaging intervals on the basis of theoretical considerations. The averaging method used by F. B. Smith (J. Roy. met. soc., Vol. 88, 376, 1962, 177) is summarized and applied by the authors; the work of J. Ogura (J. meteorol. 14, 1957, 9-17) in this field is also taken into account. The results obtained are in general agreement with an earlier paper by V. P. Gracheva and V. P. Lozhkina on the

Card 1/6

L 01452-66

ACCESSION NR: AT5019734

stability of wind direction in the surface layer of the atmosphere (Tr. GGO, No. 158, 1964). For example, in Fig. 1 of the Enclosure, the value of the parameter $\Delta T/u_1^2$, characterizing atmospheric stability in the lower layer of the atmosphere, has been plotted along the x-axis and the mean value of σ (dispersion) for the summer or winter season has been plotted (in degrees) along the y-axis for a 20-minute averaging period. With an increase of instability when $\Delta T/u_1^2 > 0$ (temperature decrease with height) the values of σ increase in summer from 2 to 25°, whereas in winter they are almost constant and equal to 3-5°. When there is an inversion ($\Delta T/u_1^2 < 0$) in both winter and summer the average values of σ change insignificantly, approximately from 6-7 to 2-3°; the winter and summer values of σ are almost equal, in contrast to unstable states when σ in summer is several times greater than the winter values. The figures alongside the vertical lines denote the number of 20-minute periods used in constructing the curve for each interval of values $\Delta T/u_1^2$; the length of the vertical lines is a measure of the scattering of individual σ values from their mean value for the considered (winter or summer) seasons. With an increase in wind velocity to approximately 5-6 m/sec the σ values for all ΔT usually decrease, except in the case of winter inversions. With an increase of wind velocity above 6 m/sec, σ in both winter and summer changes very little (about 2°), except in unstable weather in summer when mean $\sigma = 3.5^\circ$. Fig. 2 of the Enclosure shows the dependence of σ in summer, averaged for 2-hour time intervals, on the averaging period for different

Cord 2/6

L 01452-66

ACCESSION NR: AT5019734

stability conditions. It is shown that with a change in the external averaging period from 20 to 40 minutes the values of σ increase by 20% on the average under unstable conditions and by 35% under stable conditions; with a change in the averaging period from 40 to 60 min. the values increase by 15 and 25%, respectively. Orig. art. has: 11 formulas, 3 figures and 1 table.

ASSOCIATION: Glavnaya geofizicheskaya observatoriya, Leningrad (Main Geophysical Observatory) 44,55

SUBMITTED: 00

NO REF SOV: 003

SUB CODE: ES

OTHER: 003

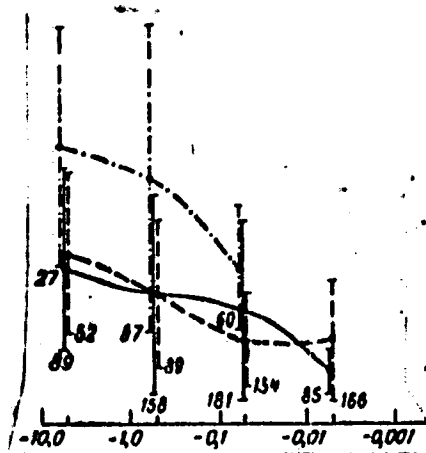
ENCL: 03

Card 3/6

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ACCESSION NR: AT5019734

ENCLOSURE: 01



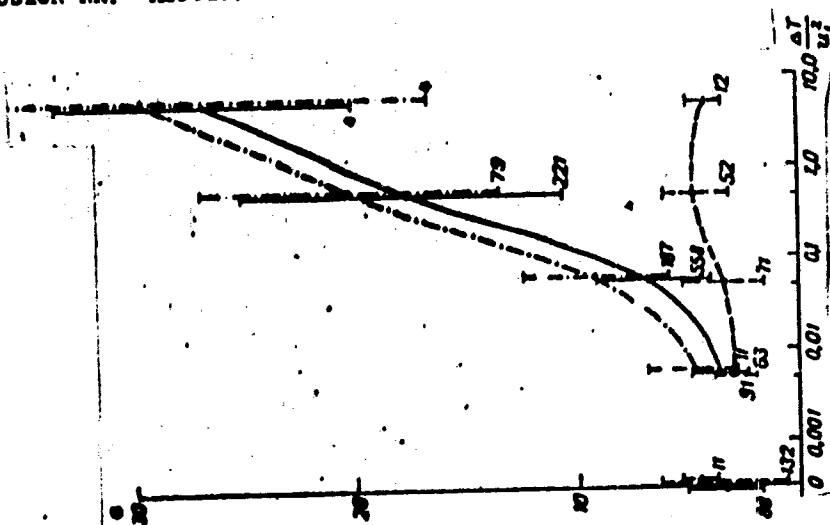
Sheet 1 of 2

Card 4/6

L 01452-66

ACCESSION NR: AT5019734

ENCLOSURE: 02



Sheet 2 of 2

Figure 1. Dependence of σ on stability: 1) 20-minute averaging period, summer data; 2) same, winter data; 3) 40-minute averaging period, summer data.

Card 5/6

L 01452-66

ACCESSION NR: AT5019734

ENCLOSURE: 03

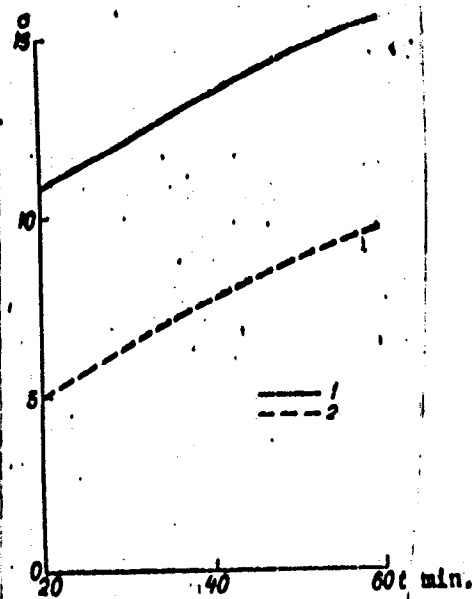


Figure 2. Dependence of σ on averaging period: 1) unstable conditions;
 Cord 6/6 *CD* 2) stable conditions.

L 2669-66 EWT(1)/EWT(m)/FCC/EWA(h) GS/GW

ACCESSION NR: AT5023953

UR/0000/65/000/000/0380/0391

AUTHOR: Berlyand, M. Ye.; Genikhovich, Ye. L.; Den'yanovich, V. K.;
Onikul, R. I.

TITLE: Effect of vertical distribution of temperature and wind velocity on the atmospheric diffusion of radioactive pollutants

SOURCE: Nauchnaya konferentsiya po yadernoy meteorologii. Obninsk, 1964. Radioaktivnyye izotopy v atmosfere i ikh ispol'zovaniye v meteorologii (Radioactive isotopes in the atmosphere and their use in meteorology); doklady konferentsii. Moscow, Atomizdat, 1965, 380-391

TOPIC TAGS: nuclear meteorology, air pollution, atmospheric surface boundary layer, atmospheric boundary layer, micrometeorology, radioactive fallout, radioactive pollution, lapse rate, atmospheric turbulence, wind velocity

ABSTRACT: Until recently, Soviet research dealing with problems of atmospheric pollution from continuously active point sources has been based on models of conditions for wind velocity and the coefficient of turbulent exchange prevailing in the surface boundary layer of the atmosphere. The present paper discusses the inapplicability of this

Card 1/2

L 2669-66

ACCESSION NR: AT5023953

model to many existing and planned point sources and to problems of radioactive fallout; it presents a quantitative analysis of the effects of lapse rates, wind velocity, turbulent exchange, and other factors and a mathematical model which reflects them as they actually occur in the thicker boundary layer. Orig. art. has: 8 formulas and 5 figures. [ER]

ASSOCIATION: none

SUBMITTED: 28Apr65

ENCL: 00

SUB CODE: ES, NP

NO REF SOV: 009

OTHER: 000

ATD PRESS: 4101

Card 212

ACC NR: AT6035507

SOURCE CODE: UP/2531/66/000/185/0003/0014

AUTHOR: Boriyand, M. Ye. (Doctor of physico-mathematical sciences); Garikovich, Ye. I.; Pashon, Ye.

ORG: none

TITLE: Theory of the relationship of atmospheric aerosol concentrations to their flow on horizontal plates

SOURCE: Leningrad. Glavnaya geofizicheskaya observatoriya. Trudy, no. 185, 1966. Voprosy atmosferynoy diffuzii i zagryazneniya vozdukha (Problems of atmospheric diffusion and air pollution), 3-14

TOPIC TAGS: micrometeorology, ^{air}atmospheric pollution, atmospheric diffusion, aerosol, ~~aerosol settling~~, ~~sampling plate~~, meteorological computer, *special purpose computer, computer calculation, gas flow*

ABSTRACT: Results are presented of studies of the theory defining the settling of aerosols from the atmosphere onto horizontal collecting plates, the relationship between the amounts of pollutants collected on the plates and the actual pollutant concentration at the level of plate installations, the effects of plate dimensions and meteorological factors, etc. These plates usually have dimensions of several

Card 1/3

UDC: none

ACC NR:AT6035507

tenths of a meter, are installed one to several meters above the ground surface, are coated with an adhesive, and are assumed to be absolutely absorbent. During an inflow of air, the aerosol particle distribution is disrupted, resulting in differences in pollutant concentrations on the plates and in the surrounding medium. Equations are derived to express the process of turbulent diffusion of aerosols above a plate; the fields of motion velocity and the exchange coefficients are taken into account.

The parabolic equation of turbulent diffusion of the aerosol was converted to a difference equation and solved numerically on a Ural-4 computer. This computer permitted storage of up to 400 points along x in a single layer, i.e., up to 400 values of the solution could be stored for fixed x . The computations were carried out for different values of the input quantities V (wind speed of inflowing air), K (the turbulence coefficient in the inflowing air), w_0 (the gravitational rate of aerosol settling), and L (plate length). The results indicated that turbulent aerosol flows have comparatively little dependence on changes in w_0 in the 0—0.1 m/sec range.

Card 2/3

ACC NR: AT6035507

The formulas derived permit estimation of the dependence of a vertical aerosol flow on plate dimensions and meteorological conditions, as characterized by values of the wind velocity and the exchange coefficient at the level of the plate. The dependence of the ratio of vertical aerosol flows to their concentrations at the height at which the plate is installed was established. The values obtained here are considerably lower than those of the simplest case, in which the flow around the plate is not considered, the horizontal component of the wind velocity u and the exchange coefficient k are not height dependent, and the vertical component w coincides with the gravitational rate of aerosol settling. Orig. art. has: 3 figures and 27 formulas.

[WA-50; CBE No. 14]
[EO]

SUB CODE: 04/ SUBM. DATE: none/ ORIG REF: 008/ OTH REF: 001

Card 3/3

GENIN, A., kand.tekhn.nauk

Combine an economy of lubricants with a reduced wear of parts.
Rech.transp. 21 no.11:53-54 N '62. (MIRA 15:11)
(Lubrication and lubricants)

L 08198-67 EWT(d)/EWT(m)/EWP(f)/EWP(1) DJ

ACC NR: AP6026349

(A,N)

SOURCE CODE: UR/0310/66/000/004/0033/0034

AUTHOR: Genin, A. (Candidate of technical sciences)

ORG: None

TITLE: Conditions for an uninterrupted use of lubricants in diesel engines

SOURCE: Rechnoy transport, no. 4, 1966, 33-34

TOPIC TAGS: ^{MARINE ENGINE} diesel engine, lubrication, lubricating oil, lubricant viscosity /
M12V lubricating oil

ABSTRACT: The maintenance and operation of lubricating oil systems in marine diesel engines are discussed. Clarification of oil by running it periodically or continuously through a centrifuge is recommended. Centrifuges of automobile type can also be used for clarifying oil on river motor-ships. In addition, lubricating oils must periodically be tested for contents of fuel residue and water. For this purpose the motor-ships must be equipped with laboratories. In general, a 4-pct content of fuel oil in lubricating oils can be admitted. This content can be tested by measuring viscosity. For instance, at 4-pct fuel content the viscosity of M12V lubricating oil is lowered to 9.5 centistokes at 100 C. The flash point of this lubricating oil with a 4-pct fuel content is about 200 C. The presence of water in lubricating oil is briefly discussed. In railway practice only traces of water (0.05%) are permitted. According to LIVT a water content of 0.4 pct can be admitted in oils used for marine power plants. The lubricating oil can be tested for water by using magnesium sulphate.

SUB CODE: 11, 13, 21/ SUBM DATE: None

Card 1/1 dda

UDC: 621.892.004

L 19050-65 Fb-4 AFETR/AFTC(b)/AFMDC/AMD/AFWL/SSD

ACCESSION NR: AP5001392

S/0310/64/000/009/0054/0055

AUTHORS: Genin, A. (Candidate of technical sciences); Gondol', S. (Engineer)

TITLE: Application of truck centrifuges for oil cleaning on motor ships

SOURCE: Rechnoy transport, no. 9, 1964, 54-55

TOPIC TAGS: marine engine, centrifuge, oil, centrifuge separation/ 6 ChRP 25/34
marine engine, Shkoda marine engine, 18D marine engine, DR 30/50 marine engine,
Bukau Vol'f marine engine

ABSTRACT: The application of hydraulically driven truck centrifuges for oil cleaning on motor ships is discussed. The centrifuge works as follows (see Fig. 1 on the Enclosures): oil enters through the centrifuge rotor, passes through tubos (3) and nozzles (4), causing the rotor (2) to turn, and then leaves through the channel (1). Centrifugal forces deposit mechanical impurities on the inside of the rotor. Standard models operate at an inlet pressure of 3-5 kg/cm² at 6000-7000 r.p.m., and process 600-200 liter/hr. The applications of the centrifuge in hydraulic circuits with two-section oil pumps (marine engines Bukau-Vol'f, 6 ChRP 25/34), single-stage oil pumps (marine engines Shkoda, 18D, DR 30/50, auxiliary engines), and autonomous oil pumps, are shown in Figs. 2, 3, and 4.

Card 1/6

L 19050-65

ACCESSION NR: AP5001392

respectively (on the Enclosures) and are self-explanatory. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 00

ENCL: 04

SUB CODE: PR, FP

NO REF SOV: 000

OTHER: 000

Card 2/6

L 19050-65

ACCESSION NR: AP5001392

ENCLOSURE: 01

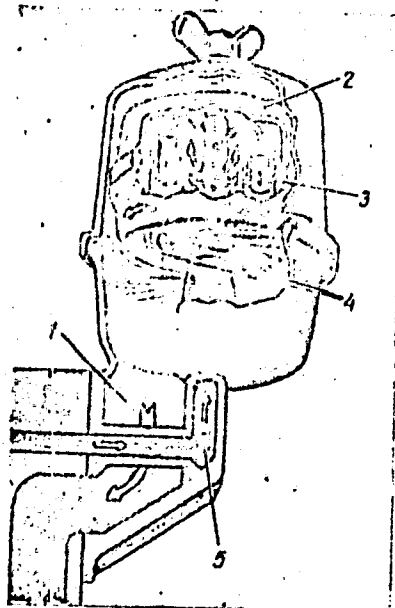


Fig. 1. Operating principle of the hydraulically driven centrifuge.

Card 3/6

L 19050-65

ACCESSION NR: AP5001392

ENCLOSURE: 02

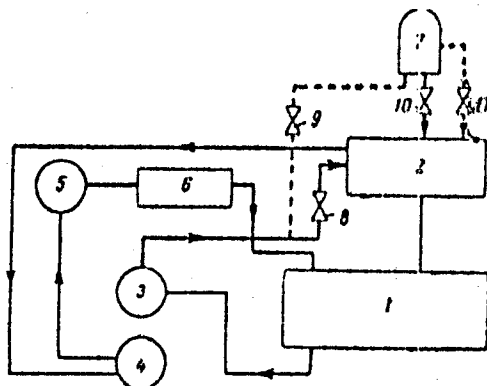


Fig. 2. Connection to a hydraulic circuit with a two-stage oil pump:
 1 -- engine; 2 -- circulation tank; 3 -- bleed-off section and
 4 -- delivery section of oil pump; 5 -- filter; 6 -- oil cooler;
 7 -- centrifuge; 8 -- throttling, and 9 --, 10 --,
 11 -- shutoff valves.

Card 4/6

L 19050-65

ACCESSION NR: AP5001392

ENCLOSURE: 03

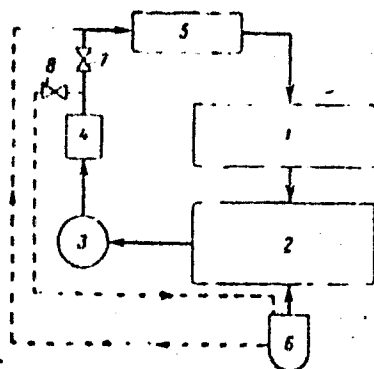


Fig. 3. Connection to a hydraulic circuit with a single-stage oil pump:
1 - engine; 2 - oil accumulator; 3 - engine oil pump; 4 - filter;
5 - cooler; 6 - centrifuge; 7 - throttling and 8 - shutoff valves;
-- existing and --- additional plumbing.

Card 5/6

L 19050-65

ACCESSION NR: AP5001392

ENCLOSURE: 04

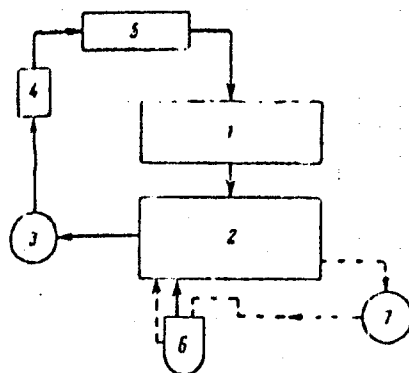


Fig. 4. Connection to a circuit with an autonomous oil pump:
 1 - engine; 2 - accumulator; 3 - engine oil pump;
 4 - filter; 5 - cooler; 6 - centrifuge; 7 - autonomous
 oil pump.

Card 6/6

... starshly nachaygy ...

Ship of 10-12 inhabitants for the ...
Tech. Group. 13 no. 10:18 ... (10:17:12)

1. ... inzh. Lenin ...
... ..

GENIN, A., kand.tekhn.nauk; GENDEL', S., inzh.

Use of motor-vehicle and tractor centrifuges for oil
purification on motor ships. Rech.transp. 23 no.9:
54-55 S '64. (MIRA 19:1)

1ST AND 2ND DEGREE										3RD AND 4TH DEGREE									
PROCESSES AND PROPERTIES INDEX										21									
<p>ca</p> <p>Method for checking the correctness of carbon monoxide and nitrogen determination in chemical analysis of generator gas. A. H. Genn. <i>Vestnik Inzhenera</i> 1944 1944, No. 8, 201 N. A math analysis for testing the correctness of CO and N detns. in generator gas is presented. M. Hosh</p>																			
ADDITIONAL METALLURGICAL LITERATURE CLASSIFICATION										REMARKS									
SOURCE DIVISION										SOURCE DIVISION									
SOURCE NO.										SOURCE NO.									
SOURCE NO.										SOURCE NO.									

21

Method for calculating the composition of gas generated from peat. A. V. Genn. *Tekhnaya Prom.* 23, No. 4, 21-7 (1946).—Six formulas are given which when substituted and solved permit calc. the compn. of a gas generated from peat. M. Hosh

ASD-51A METALLURGICAL LITERATURE CLASSIFICATION

1. 1. 1.

32668. Issledeniye intensivnosti protoka i parifikatsii ivernogo topliva v
avtomaticheskikh gazogeneratorakh. Trudy Tsentr. Nauch. - issled. In - ta rech.
Mota, vyp. 2, 1949, s. 105-30. - Bibliogr: 16 nazv.

50: Letopis' zhurnal'nykh Statey, Vol. 44, Moskva, 1977

G. N. N. A. S.

1953. Opredelenie effektivnosti raznogo gastronomicheskogo raznoobraziya. Trudy Tsentr. nauch.-issled. in-ta rech. floty, vy. 1, 1953, s. 1-10.

SC: Letopis' Zhurnal'nykh Statey, Vol. 14, Moskva, 1949

ZOLLEROV, L.K.; GUSEV, L.M., kandidat tekhnicheskikh nauk, retsenzent;
GRIBANOV, V.I., kandidat tekhnicheskikh nauk, retsenzent; GININ,
A.B., kandidat tekhnicheskikh nauk, redaktor; POL'SKAYA, R.G.,
tekhnicheskiiy redaktor

[Gas engine installations] Gasomotornye ustanovki. Moskva, Gos.
nauchno-tekhn. izd-vo mashinostroit. lit-ry, 1951. 238 p.
(Producers) (MLRA 9:8)

G.I. NIN A.B.
KHANDOV, Z.A.; GENIN, A.B.; ARNOLD, L.V., redaktor; VOLCHOK, K.M.,
tekhnicheskly redaktor

[Gas powered marine engines] Sudovye gasosilovye ustanovki. Moskva,
Izd-vo Ministerstva rechnogo flota SSSR, 1951. 370 p. [Microfilm]
(Marine engines) (MLRA 10:2)

Fuels Abstracts
Vol. 14 No. 4
October 1953
Gasification

5416. PRODUCTION AND USE OF PRODUCER GAS IN RIVER TRANSPORT
UNDERZAKHIN, Evgenii A.D. (Moscow: Rezh. Transp., 1952, 104pp., 3.60 rubs.
rev. in Rezh. Transp. (Riv. Transp., Moscow), Mar./Apr. 1953, cover).
Data are given on wood fuel and schemes for gasifying it. Stationary
direct process producers and marine reversed process producers are
described. Calculations are given for the change over of a furnace from
fuel oil to producer gas. Information is also given on air heaters, gas
burners, melting of cast iron with producer gas from wood and safety
precautions for gas-fired furnaces.

4/13/53
298

GENIN, A. D.

Fuel Abstracts
Vol. 14 No. 4
October 1953
Gasification

3117. PROVISION OF SERVICABLE PRODUCER GAS PLANT FOR MARINE U.S. Coast, A.M.* (Reef. Transp. (Rev. Transp., Boston), 1949, (5), 10; Schiffentechnik, Jan. 1951, vol. 3, 12). It is often desirable to replace oil fuel by solid fuels of local origin. The simplest method of achieving this when the prime mover for which the fuel is required is an internal combustion engine is by installing a producer gas plant. It is suggested that the rate of gasification of a plant of this type could easily be raised to 10-15 g./ft.²/h. and it is about double the rate achieved in existing marine plants. The boilers in many vessels can be heated either by the exhaust gases from the engine or by oil; the steam that is thus available is very useful for the gasification of the fuel if a producer plant is installed. If the stirring of the boiler is replaced by a circulating air flow, it will be found to keep the fire grate cleaner so that the main draught is sufficient to draw off the gas. In addition, the thin stream of air produced to stir the fuel is used as preheating air for the gasifier. This means that the hot gas is cooled down before entering the boiler and the water for domestic heating is preheated. The author's design is shown in Fig. 1.

P. H. G.

GENIN, A., kandidat tekhnicheskikh nauk.

Using gas fuel in the river fleet. Rech.transp. 16 no.2:15-16 # 157
(MLRA 10:3)

(Marine engines)

GENIN, A.B.

Experience in producing fuel gas from fuel oil. Gaz.prom. 4
no.9:19-21 S '59. (MIRA 12:11)
(Gas as fuel) (Petroleum products)

GENIN, A.B., kand. tekhn. nauk

Use of natural gas in shipbuilding and ship repairs. Sudostroenie
25 no.10:38-39 0 '59. (MIRA 13:2)
(Gas, Natural) (Shipbuilding--Supplies)

S/128/60/000/010/005/016/XX
A033/A133

AUTHOR: Genin, A. B.

TITLE: On the problem of burning solid fuel in cupolas

PERIODICAL: Liteynoye proizvodstvo, no. 10, 1960, 7 - 8

TEXT: The author comments on the thermal and metallurgical processes in cupolas operating on solid fuel and points out that the intensity of the combustion process depends on the composition and properties of the solid fuel and on the blast conditions. N. G. Girshovich [Ref. 1: Liteynoye proizvodstvo, no. 1, 1952] in his article emphasizes that the fuel combustion in the cupola is a laminar combustion process. Therefore, in cupolas, as in gas generators, it is necessary to distinguish two zones: the oxidizing and the reducing zone. The author criticizes the conception of L. M. Mariyenbakh and Yu. S. Sukharchuk [Ref. 4: "Liteynoye proizvodstvo", no. 7, 1951] that special regularities could be applied to the fuel combustion process in cupolas and cites the opinion, still prevailing nowadays, that a low porosity and reactivity of smelting fuel is the prerequisite for an increase of the pig iron overheating temperature and thermal efficiency of

Card 1/3

On the problem of burning solid fuel in...

S/128/60/000/010/005/016/XX
AO33/A133

cupolas [Ref. 5: I. I. Nizhnikov, L. M. Shteyn. "Liteynoye delo", no. 4, 1941; Ref. 6: M. Mariyenbakh. O standarte na liteynyy koks (On the foundry coke standard). "Vestnik inzhenerov i tekhnikov", no. 3, 1947]. This opinion is based on the following: during the reaction of carbon with oxygen only CO₂ originates, a part of which, depending on the conditions, is reduced to CO. It has been established, however [Ref. 2: A. S. Predvoditelev, L. G. Khitrin et al. Goreniye ugleroda (Carbon combustion) 1949] that the reaction products in the oxygen zone are simultaneously CO and CO₂. The author criticizes the fact that investigations of the coke combustion process in the cupola were carried out under laboratory conditions only. Commenting again on the work of Mariyenbakh and Sukharchuk [Ref. 4] he criticizes that no data on the heat and metallurgical process were presented by the authors, nor did they elucidate the effects of the physical-chemical peculiarities of the cupola process on the regularities of the coke combustion in the bed charge, while the collected gas samples taken near the cupola lining cannot be considered as representative for the whole cross section. The author of this article emphasizes the interrelation between the cupola diameter and the average dimension of the coke lumps which, during

Card 2/3

On the problem of burning solid fuel in...

S/128/60/000/010/005/016/XX
A033/A133

many years of foundry practice, has been established as follows:

cupola diameter, mm . . .	250*	600*	610	760	800*
coke lump dimensions, mm	30-50	80-120	50	63	30-50
	70-90				

cupola diameter, mm . . .	910	1070	1220	1370	1680	1830
coke lump diameter, mm .	88	100	112	125	137	150

*Dimensions of experimental cupolas

Moreover, the author regrets that, besides modern and advanced theories of the cupola process, also the wrong opinions of Ye. Pivovarskiy [Ref. 8: Vy-sokokachestvennyy chugun i fiziko-metallurgicheskiye osnovy yego izgotovleniya (High-grade pig iron and the physical-chemical principles of its production), 1932] are still propagated. Concluding, the author states that a high CO-content in the waste gas is a characteristic feature of a high temperature in the bed charge [Ref. 1]. There are 9 Soviet-bloc references.

Card 3/3

GENIN, A.B.

Optimal ratio of air flow and coke consumption in cupolas.
Lit. proizv. no.11:26 N '64. (MIRA 18:8)

GENIN, A.B., kand. tekhn. nauk

Basic characteristics of the combustion of solid fuel in a
cupola furnace. Trudy LIVT no.73:46-51 '64.

(MIRA 18:11)

GENIN, A.B., kand. tekhn. nauk; GENDEL', S.G., inzh.

Charts for the connection of separators to the lubricating
system of marine power plants. Trudy LIVT no.72:18-21 '64.
(MIRA 18:10)

SISAKYAN, N.M. (Moskva); GAZENKO, O.G. (Moskva); GENIN, A.M. (Moskva)

Some problems of space biology. Zhur. ob. biol. 22 no. 5: 325-332
S-0 '61. (MIRA 14:9)

(SPACE BIOLOGY)

VOLENKIN, Yu.M.; YAZDOVSKIY, V.I.; GONIN, A.M.; VASIL'YEV, P.V.;
GYURDZHIAN, A.A.; GURCVSKIY, N.H.; GORBOV, F.D.; SERAFIN,
A.D.; BELAY, V.Ye.; BAYEVSKIY, R.M.; ALTUKHOV, G.V.;
KOPANEV, V.I.; KAS'YAN, I.I.; YEGOROV, A.D.; SIL'VESTROV,
M.M.; SIMPURA, S.F.; TERENT'YEV, V.G.; KRYLOV, Yu.V.; FOMIN,
A.G.; USHAKOV, A.S.; DEGTYAREV, V.A.; VOLOVICH, V.G.;
STEPANTSOV, V.I.; MYASHNIKOV, V.I.; YAZDOVSKIY, V.I.; KASHIN,
P.S., tekhn. red.

[First space flights of man; the scientific results of the
medicobiological research conducted during the orbital
flights of the spaceships "Vostok" and "Vostok-2"] Pervye
kosmicheskie polety cheloveka; nauchnyye rezul'taty mediko-
biologicheskikh issledovaniy, provedennykh vo vremya orbi-
tal'nykh poletov korablei-sputnikov "Vostok" i "Vostok-2."
Moskva, Izd-vo Akad. nauk SSSR, 1962. 202 p. (MIRA 15:11)
(SPACE MEDICINE) (SPACE FLIGHT TRAINING)

SISAKYAN, N.M.; GAZENKO, O.G.; GENIN, A.M.

Problems of space biology. Probl.kosm.biol. 1:17-26 '62.

(MIRA 15:12)

(SPACE BIOLOGY)

BALAKHOVSKIY, I.S.; GAZENKO, O.G.; GYURDZHIAN, A.A.; GENIN, A.M.;
KOTOVSKAYA, A.R.; SERYAPIN, A.D.; YAZDOVSKIY, V.I.

Results of investigations in an artificial satellite. Probl.
kosm.biol. 1:359-370 '62. (MIRA 15:12)
(SPACE FLIGHT--PHYSIOLOGICAL EFFECT)

GENIN, A.M.

SISAKEAN, N.M. [Sisakyan, N.M.]; GAZENKO, O.G.; GHEININ, A.M. [Genin, A.M.]

Some problems of cosmic biology. Analele biol 16 no.2:3-11
Mr-Apr '62.

✕

GENIN, A., doktor biologicheskikh nauk; GUROVSKIY, N., kand. med. nauk

Why fighter pilots became the first astronauts? Av. i kosm. 44
no. 2:39-41 '62. (MIRA 15:3)
(Astronauts)

GAZENKO, O., doktor biologicheskikh nauk; GENIN, A., doktor biologicheskikh nauk; YAZDOVSKIY, V., doktor med.nauk

Physiological studies on "Vostok-2." Av.1 kosm. 45 no.7:29-
34 '62. (MIRA 15:8)

(Space perception)

GENIN, Abram Moiseyevich; GUROVSKIY, Nikolay Nikolayevich;
YEMEL'YANOV, Mikhail Dmitriyevich; SAKSONOV, Pavel
Petrovich; YAZDOVSKIY, Vladimir Ivanovich; NEYMAN, M.I.,
red.; ~~BAKMANOV, G.M.~~, tekhn. red.

[Man in space] Chelovek v kosmose. Moskva, Medgiz, 1963.
159 p. (MIRA 17:3)

VOLYNKIN, Yu.M.; YAZDOVSKIY, V.I., prof.; GENIN, A.M.; GAZENKO, O.G.; GUROVSKIY, N.N.; YEMEL'YANOV, M.D.; MIKHAYLOVSKIY, G.P.; GORBOV, F.D.; SERIYAPIN, A.D.; BAYEVSKIY, R.M.; ALTUKHOV, G.V.; KOPANEV, V.I.; KAS'YAN, I.I.; MYASNIKOV, V.I.; TERENT'YEV, V.G.; BRYANOV, I.I.; FEDOROV, Ye.A.; FOMIN, V.S.; ARUTYUNOV, G.A.; ANTIPOV, V.V.; KOTOVSKAYA, A.R.; KAKURIN, L.I.; TSELIKIN, Ye.Ye.; USHAKOV, A.S.; VOLOVICH, V.G.; SAKSONOV, P.P.; YEGOROV, A.D.; NEUMYVAKIN, I.P.; TALAPIN, V.F.; SISAKYAN, N.M., akademik, red.; KOLPAKOVA, Ye.A., red.izd-va; ASTAF'YEVA, G.A., tekhn.red.

[First group space flight; scientific results of medical and biological studies carried out during the group orbital flight of manned satellites "Vostok-3" and "Vostok-4"]
Pervyi gruppovoi kosmicheskii polet; nauchnye rezul'taty mediko-biologicheskikh issledovaniy, provedennykh vo vremya gruppovogo orbital'nogo poleta korablei-sputnikov "Vostok-3" i "Vostok-4." Moskva, Izd-vo "Nauka," 1964. 153 p.

(MIRA 17:3)

GENIN, A. M.; SHEPELEV, Ye. Ya.

"Some problems and principles in formation of the environment on the basis of circulation of matter."

report submitted for 10th Intl Astronautical Cong, Warsaw, 7-12 Sep 64.

VOLYNKIN, Yu.M.; ARUTYUNOV, G.A.; ANTIPOV, V.V.; ALTUKHOV, G.V.;
 BAYEVSKIY, R.M.; BELAY, V.Ye.; BRYANOV, F.V.; BRYANOV, I.I.;
 VASIL'YEV, P.V.; VOLOVICH, V.G.; GAGARIN, Yu.A.; GENIN, A.M.;
 GORBOV, F.D.; GORSHKOV, A.I.; GUROVSKIY, N.N.; YESHANOV, N.Kh.;
 YEGOROV, A.D.; KARPOV, Ye.A.; KOVALEV, V.V.; KOLOSOV, I.A.;
 KORESHKOV, A.A.; KAS'YAN, I.I.; KOTOVSKAYA, A.R.; FALIBERDIN,
 G.V.; KOPANEV, V.I.; KUZ'MINOV, A.P.; KAKURIN, L.I.; KUDRCVA,
 R.V.; LEBEDEV, V.I.; LEBEDEV, A.A.; LOBZEN, F.P.; MAKSIMOV,
 D.G.; MYASNIKOV, V.I.; MALYSHKIN, Ye.G.; NEUMYVAKIN, I.P.;
 ONISHCHENKO, V.F.; POPOV, I.G.; PORUCHIKOV, Ye.P.; SIL'VESTROV,
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[Second group space flight and some results of the Soviet
 astronauts' flights on "Vostok" ships; scientific results of
 medical and biological research conducted during the second
 group space flight] Vtoroi gruppovoi kosmicheskii polet i neko-
 torye itogi poletov sovetskikh kosmonavtov na korabliakh
 "Vostok"; nauchnye rezul'taty medikobiologicheskikh issledovaniy,
 provedennykh vo vremia vtorogo gruppovogo kosmicheskogo poleta.
 Moskva, Nauka, 1965. 277 p. (MIRA 18:6)

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S/2865/64/003/000/0059/0065

AUTHOR: Genin, A. M.

TITLE: Some principles of formulation of artificial environment in spaceship cabins

SOURCE: AN SSSR. Otdeleniye biologicheskikh nauk. Problemy* kosmicheskoy biologii, v. 3, 1964, 59-65

TOPIC TAGS: manned space flight, closed ecological system, respiration, cabin pressure, life support, oxygen

ABSTRACT: Artificial environments for long-duration space flights should be based on the lower limits of permissible partial pressure of oxygen in pulmonary air and the permissible concentration of certain harmful admixtures. The limit of minimal barometric pressure can be established by retention of normal partial pressure of oxygen, CO₂, and humidity in alveolar air. However, a pure oxygen medium may affect the pressure on the middle ear. Direct experimental research on the effect of prolonged, low barometric pressure (while maintaining sea level partial pressure of oxygen) has been performed in the Soviet Union. These experiments have shown

Card 1/4

ACCESSION NR: AT4037679

that the lower limit of physiological tolerance to lowered barometric pressure does not lie above the limit determined by preservation of normal partial pressure of oxygen and CO₂ in alveolar air. However, these findings cannot be regarded as final. Difficulties arise from the fact that the presence of human beings for prolonged periods of time in a spaceship cabin, even under optimum conditions, is not a neutral factor. Consequently, it is not out of place to examine the question of varying certain parameters of the artificial medium in order to produce an active stimulating effect on the central nervous system and the psychological condition of man. There is another problem related to the fact that, after the prolonged stay in an artificial environment, man should not be subjected to too great a strain in readjusting to a normal earth environment. It may therefore be necessary to strive not for a neutral environment but for an active environment which will affect man's organism in such a way as to enable him to withstand the transition to a normal environment more easily. The choice of a life support system depends primarily on the duration of the flight. The longer the flight, the more necessary it becomes to institute cycles of regeneration of various waste products of human metabolism. For prolonged flights it seems practical to utilize regeneration of oxygen, CO₂, water, and partial or full regeneration of food products in life support systems. For short flights (10 to 15 days), it is more practical to carry supplies of oxygen, absorbents of CO₂ and harmful admixtures,

Card 2/4

ACCESSION NR: AT4037679

water, and food products, without using regenerating cycles. The Vostok systems were based on carried supplies. The use of highly active chemicals from which oxygen could be extracted without additional expenditures of energy and which were used for absorption of CO₂ and partial absorption of humidity and harmful admixtures made this system highly reliable and very advantageous in comparison with other methods of carrying supplies of oxygen and absorbents. For flights of intermediate duration a water regeneration cycle must be introduced. The regeneration of oxygen from CO₂ and metabolic water presents considerable technical difficulties, although in theory this question can be solved on the basis of physicochemical and biological methods. The introduction of an oxygen-regeneration cycle will permit flights of very long duration. However, the autonomic existence of man in a spaceship in flights of undetermined duration can be achieved only when all components of the artificial environment are regenerated, including food products. The only realistic method of effecting a closed ecological cycle on board spaceships at the present time is based on the use of natural photosynthesis of green plants. The intensive research which is going on in this direction in many countries of the world and the results already obtained make it possible to assume that this problem will be solved in the near future.

Card

3/4

S/965/62/001/000/015/033

E028/E185

AUTHORS: Antipov, V.V., Dayevskiy, R.M., Gazenko, O.G.,
Genin, A.M., Gyurdzhian, A.A., Zhukov-Verezhnikov, N.N.,
Zhuravlev, B.A., Karpova, L.I., Parfenov, G.P.,
Seryapin, A.D., Shepelev, Ye.Ya., Yazdovskiy, V.I.

TITLE: Some results of medical and biological investigations
in the second and third satellites

SOURCE: Problemy kosmicheskoy biologii. v.1. Ed. by
N.M.Sisakyan. Moscow, Izd-vo AN SSSR, 1962. 267-284

TEXT: The maintenance of life conditions is discussed with
special reference to the second Soviet satellite. During the
flight the proportion of oxygen in the air of the cabin could be
maintained at 21 to 24%, whereas the relative humidity rose from
37 to 47%. The temperature ranged from 16 to 19°C. Water and
food were provided together in a mixture solidified with agar, in
order to facilitate automatic dispensing in conditions of weight-
lessness. This was carried out twice daily by command signals
from Earth. Telemetric recording of the physiological parameters
of the dogs Belka and Strelka during space flight showed the
Card 1/2

Some results of medical ...

S/865/62/001/000/015/033
EC28/E185

occurrence of tachycardia as a result of acceleration, noise and vibration; there was also a rise in the respiration rate: a return to normal pre-flight values occurred during the condition of weightlessness. Movements of the animals were observed by television cameras and also by potentiometric sensors mounted in the harness. No abnormalities were observed in the behavior of the animals after return to earth or during the following 3 months. It was concluded from the experiments carried out in the second satellite that dogs could readily be accustomed to space flight conditions. Genetic changes were noted in the progeny of actinomycetes, plant seeds and fruit flies after return from space flight. The third space satellite contained two dogs (Pchelka and Mushka), two guineapigs, two rats, twenty six mice, fruit flies, seeds and other biological materials which were included in order to study the effects of cosmic radiation. The results are not described.

Card 2/2

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SOURCE CODE: UR/0000/66/000/000/0001/0009

AUTHOR: Genin, A. M.; Golovkin, L. G.

ORG: none

TITLE: Problem of prolonged autonomous exposure of a man to the conditions of a spacesuit

SOURCE: International Astronautical Congress. 17th, Madrid, 1966.
Doklady. no. 8. 1966. K probleme dlitel'nogo avtonomnogo sushchestvovaniya
cheloveka v kosmicheskoi skafandre

TOPIC TAGS: space suit, life support system, manned space flight,
space suit ventilation

ABSTRACT:

At the present time, scientific research and design work are investigating various systems for thermal regulation of spacesuits. The basic problem in such systems is the removal of endogenic heat, which varies in dependence on the amount of work performed by the cosmonaut and between 90 and 500 kcal/hr. Radiant heat exchange between the spacesuit and the surrounding medium can be reduced to a minimum by vacuum type insulation. The majority of the systems under

Cord 1/11

ACC NR: AT7011646

development are based on utilization of the latent heat of evaporation of water. The present paper deals with maintenance of the heat balance of the cosmonaut within a spacesuit only by means of physiological perspiration alone. The most efficient method of losing endogenic heat directly utilizes evaporation of liquids from the surface of the skin or from the lungs. This system has certain disadvantages in that the possibility of creation of comfortable heat sensations and retention of normal structure of the heat balance is eliminated.

The first series of experiments, carried out in a thermal pressure chamber at more than 40°C, was designed to study the ability of the organism to compensate for external heat loading for periods of 2 to 10 hrs, both in a state of relative rest and during the performance of physical work. Subjects wore spacesuits ventilated by sufficient dry air to assure almost complete evaporation of all perspiration produced. In order to compensate for dehydration in experiments lasting more than 3 hrs, the subjects were permitted to drink an unlimited but strictly recorded amount of liquids. An absolute pressure of 354 to 267 mm Hg was maintained inside the spacesuit. Evaluation of the heat exchange condition of the subjects was based on temperature and

Card 2/11

ACC NR: AT7011646

on basic physiological functions (rectal temperature, skin temperature at 5 different points, temperature of the sub-spacesuit space, the heat produced as indicated by the pulmonary gas exchange, moisture loss, the effectiveness of evaporation of sweat, and pulse and respiration frequency). Seven subjects were used in 25 experiments.

A 2-hr exposure with an external heat load of 133 kcal/hr resulted in the onset of overheating. Body temperature rose by 0.3°, the heart rate increased somewhat; the total heat load (including endogenic heat) was 219 kcal/hr; and moisture loss was 357 g/hr. All of the perspiration produced evaporated completely. When the external heat load was reduced and the total heat load maintained at about the same level by increasing the physical workload, no overheating was observed, even during longer exposures. In the latter case, moisture loss was 398 g/hr. If the external heat load was reduced to 46 kcal/hr, the condition of the subject was significantly better. Moisture losses dropped to 210 g/hr and the subjects evaluated their own sensations as being warm. In this case the subjects remained in spacesuits for a period of 10 hr. During this period

Card 3/11

ACC NR: AT7011646

their general condition did not change except towards the very end, when general fatigue set in.

Results of these experiments agree with those found in the literature, which indicate that heat produced by muscular exertion is easier for humans to withstand than an external heat load. On the basis of these experiments it can be assumed that it is possible for man to remain in spacesuits for periods of 3 to 4 hrs and to dissipate 200-220 kcal/hr by evaporation of perspiration from the skin. This figure includes both endogenic and external heat load. If the external heat load is reduced, the time that man can withstand under these conditions increases considerably.

In a second series of experiments the ability of the organism to lose heat or to maintain thermal balance by sweat loss for periods of up to 7 days was investigated. Experiments were performed in a thermal pressure chamber to simulate actual heat conditions during flight and during spacecabin depressurization. For this experiment, 3 subjects were used, who were from 21 to 38 years of age and wore spacesuits in which an abso-

Cord 4/11

ACC NR: A17011646

lute pressure of 300 mm Hg was maintained. The residual pressure in the chamber was 5-6 mm Hg. The pressure within the chamber and within the spacesuits did not vary during the duration of the entire experiment. In order to prevent heat exchange through the surface of the spacesuit, the temperature of the chamber walls and chamber atmosphere was maintained on a level which corresponded to the temperature of the gas mixture in the sub-spacesuit space. The subject, wearing a carefully fitted spacesuit, was placed into a special couch or armchair. This couch could be made to recline at any angle all the way to a horizontal surface. Life support was provided by a special laboratory system, to prevent the necessity of changing the pressure in either chamber or spacesuit. Food was supplied to inside the helmet of the spacesuit in liquid form. Unlimited water was available to the subject. The helmet was supplied with pure oxygen. The muscular activity of the subjects was limited to controlling life support systems and the performance of functional tests for investigation of the condition of the cardiovascular system. Two different types of spacesuit ventilation were used. In the first, the temperature of the air entering the suits was close to that of the skin surface,

Card. 5/11

ACC NR: AT7011666

and all endogenic heat was removed by evaporation of sweat. In the second case, 25 to 40% of the heat was removed from the spacesuit by ventilating it with cooled air.

The thermal conditions of the subjects were studied by determining the following parameters: energy expenditure, moisture loss (other than kidney), body temperature under the tongue, skin temperature at 7 points, temperature of the air vented from the spacesuit, and the temperature and humidity of the air in the sub-spacesuit space. Thermal exchange in the subjects was calculated from these parameters. In addition, the authors investigated the dynamics of certain functional indices of the cardiovascular system, respiration, metabolic processes, and work capacity. The maximum duration of the experiment was 7 days 17 hrs. One of the experiments was cut short after 4 days due to a sharp deterioration in the condition of the subject, chiefly due to overheating of the organism and a weakening of the functional condition of the cardiovascular system.

The results obtained in these experiments indicate that various factors related to prolonged wearing of a
Cord 6/11

ACC NR: AT7011646

spacesuit under conditions of excess pressure and reduced ambient pressure place a serious load on the organism, placing constant and prolonged stress on the compensatory mechanisms. During the first 3 days, the general condition of all subjects and the level of their work capacity showed no serious changes. By the 4th and 5th days, shifts appeared in the functional condition of the subjects which were directly related to the magnitude and duration of heat loading.

Differences between subjects depended on different loading conditions. Subject A, whose spacesuit during the entire 7 days was ventilated by cooled air, showed no noticeable strain of the thermoregulatory system. Body temperature was maintained within limits of 36.5 to 37.2°C, average skin temperature ranged from 34.6 to 36.3°C, heart rate in the condition of relative rest did not exceed 80 beats/min, and average non-kidney moisture loss was 2140 g/day. This subject evaluated his sensations as "warm." The post-experimental clinical physiological examination did not reveal any major changes. Observed shifts could be ascribed to general fatigue and the relative 7-day hypodynamia.

Cord 7/11

ACC NR: AT7011646

In experiments with increased heat load, where almost all of the endogenous heat was removed by means of evaporation of sweat, the stress on the system of body thermoregulation was more pronounced. Non-kidney moisture loss was from 3650 to 4000 g/day. As could be judged from the relatively stable temperature of the body and skin during the first 3 days, it was possible to maintain heat balance of the organism. On the 4th day, however, both subjects (B and C) began to show symptoms of overheating (increases in body temperature and in heart rate). A gradual increase of these phenomena reached its maximum on the 5th day. The experiment with patient B was terminated. After the temperature of the ventilating air of patient C's spacesuit was reduced, his general condition became normal. Body temperature dropped to 37.5°C and the heart rate slowed to between 64 and 72 beats/min. During the next 2 days, body temperature ranged between 37.0 and 37.6°C. The skin temperature slightly exceeded normal, ranging between 35.5 and 36.5°C.

Apparently the considerable change in the thermal balance of subjects B and C on the 4th day of the experiment was due to exhaustion of the thermoregulatory

Card 8/11

ACC NR: AT7011646

mechanisms, which by then had been under stress for some time. The immediate cause was perspiratory dysfunction: even with the unlimited amount of water available, on the 4th and 5th days subject C exhibited a reduction in non-kidney moisture loss which could have caused increased overheating.

The post-experimental examination of patient B revealed a pronounced fatigue and a hypostatic edema of the lower extremities. The edema of the lower extremities was probably due to the condition fact that this subject was obliged to sleep with his feet down, to increased permeability of the capillaries, and to disrupted electrolyte balance caused by increased non-kidney fluid loss. Patient A, who was permitted greater freedom of movement, who was able to rest and sleep in a horizontal position with his legs raised, and who was exposed to a smaller heat load, showed no edema. Hydrostatic weighing of patient A showed that the non-fatty component of the body increased only by 350 g. During the time of the experiment in conditions of high heat load, patient C, who was permitted to sleep and rest in a horizontal position, showed no apparent edemas. However, following the experiment, the water

Card 9/11

ACC NR: AT7011646

component of his body had increased by 1000 g. During the final day of the experiment, when the thermal loading was substantially reduced, urine production increased from 500-740 to 1525 g day (compared to a daily urine production in subjects A and B during the experiment of approximately 663 to 758 g/day). This great diuresis in patient C apparently indicated the appearance of hidden edemas, which began to dissipate when the thermal load was reduced. Following the experiment, subject C showed fatigue and vascular-vegetative instability. Within 3 days, all these symptoms had disappeared.

Thus, in experiments where all of the heat exchange of the subject was accomplished by evaporation of sweat, thermal balance could be maintained for 3 or 4 days, after which symptoms of overheating appeared. After 4 to 5 days, the thermoregulatory mechanisms became exhausted and intensive overheating appeared. When 25 to 40% of the endogenic heat of the body was removed by use of cooled air, the experimental conditions could

Cord 10/11